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REMARKS

This is a full and timely response to the final Official Action mailed March 8, 2005.

Reconsideration of the application in light of the following remarks is respectfully requested.

Claims 8-45, 50-52 and 55-56, which were withdrawn under a previous Restriction Requirement, are cancelled herein to expedite allowance of this application. No claims have been amended by the present paper. Therefore, claims 1-7, 46-49, 53, 54 and 57-63 are now pending for further consideration.

The "withdrawn" claims are cancelled without prejudice or disclaimer. Applicant reserves the right to file any number of continuation or divisional applications to the cancelled claims to any other subject matter described in the present application.

With regard to the prior art, claims 1-7, 46-49, 53, 54 and 57-63 are all rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of U.S. Patent No. 4,689,999 to Shkedi ("Shkedi") and U.S. Patent No. 5,381,299 to Provenzano et al. ("Provenzano"). This is the sole issue raised in the recent final Office Action. For at least the following reasons, this rejection is respectfully traversed.

Claim 57 recites:

A pressure sensor comprising:
a first membrane that flexes in response to pressure;
a reference cavity covered by said first membrane, said reference cavity containing a vacuum; and
a second membrane adjacent to said first membrane;
wherein said reference cavity and said second membrane are disposed on opposite sides of said first membrane, said first and second membranes forming a capacitor having a capacitance that varies in accordance with the flexing of said first membrane and said pressure.

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The recent final Office Action does not indicate why or how the teachings of Shkedi and Provenzano are to be combined to approximate the subject matter of claim 57. Rather, the final Action appears to allege that Shkedi taken alone teaches all the features of claim 57. According to the final Action, "Shkedi explicitly teaches . . . a first membrane 14 that flexes in response to pressure, a reference cavity covered by the first membrane, the reference cavity 132 containing a vacuum (see, e.g., col. 7, lines 42-50) and a second membrane (16 and/or 18) adjacent to said first membrane wherein the reference cavity and the second membrane are disposed on opposite sides of the first membrane 14, the first and second membranes form a capacitor." (Action 3/8/05, p. 2).

This, however, is demonstrably incorrect given a cursory review of Figs. 1 and 2 of Shkedi. Shkedi actually fails to teach or suggest the claimed sensor with a reference cavity and second membrane disposed on *opposite* sides of a first membrane that flexes in response to pressure. The Office Action identifies the claimed first membrane as element (14) of Shkedi, the reference cavity as element (132) and the second membrane as element (16 and/or 18). As Applicant pointed out previously, reference number (132) does not exist in the Shkedi reference. Consequently, Applicant must assume that the Action is referring to the space immediately below the first diaphragm (14) as the "reference cavity." That being the case, any review of the figures of Shkedi will show that the reference cavity and the second membrane (16 and/or 18) are on the *same* side of the first membrane (14) and are *not* on opposite sides of the first membrane as claimed. The recent final Office Action failed to respond to this argument which was made in Applicant's previous response in this application.

Therefore, Shkedi not only fails to teach or suggest the claimed invention, but actually teaches away from claim 57 by showing the reference cavity and the second membrane (16

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and/or 18) on the *same* side of the first membrane (14). Apparently, this deficiency may somehow be remedied by Provenzano. However, the final Office Action does not indicate how or why the teachings of Provenzano are to be combined with Shkedi in this regard so as to overcome the contrary teachings of Shkedi that the reference cavity and second membrane are on the same side of the first membrane. Consequently, the final Office Action fails to make out a *prima facie* case of unpatentability as to claim 57.

Moreover, Provenzano does not appear to teach or suggest a reference cavity containing a vacuum and second membrane on *opposite* sides of a first membrane as claimed. Thus, neither of the cited prior art references teach or suggest the features of claim 57. "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Because the neither Shkedi nor Provenzano teach or suggest the claimed reference cavity containing a vacuum and a second membrane that are on opposite sides of a first membrane, the rejection of claim 57 should be reconsidered and withdrawn.

Turning to claim 1, claim 1 recites:

A pressure sensor comprising:
a first membrane that flexes in response to pressure;
a reference cavity covered by said first membrane, said reference cavity containing a vacuum; and
a second membrane adjacent to said first membrane;
wherein said second membrane is not in contact with said vacuum; and
wherein said first and second membranes form a capacitor having a capacitance that varies in accordance with the flexing of said first membrane and said pressure.
(emphasis added).

Similarly, claim 46 recites:

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A pressure sensor comprising:
a first means for flexing in response to pressure;
a reference cavity covered by said first means, said reference cavity containing
a vacuum;
a second means for forming a capacitor with said first means, said capacitor
having a capacitance that varies in accordance with the flexing of said first means and
said pressure; and
means for measuring said capacitance;
wherein said second means is adjacent to said first means and not exposed to
said vacuum within said reference cavity.
(emphasis added).

In contrast, the combination of Shkedi and Provenzano fails to teach or suggest a second membrane or means that is not in contact with or exposed to a vacuum. The final Office Action implicitly admits that the combination fails to teach this feature of the claimed invention. According to the final Office Action, “it would have been obvious to form the second membrane of Shkedi to NOT be in contact with the vacuum, if desired.” (Action of 3/8/05, p. 4) (emphasis in the original). This is a mere conclusion that has *no* support in the prior art actually cited.

As shown in Fig. 1 of Shkedi, all the space between the various diaphragms (12, 16, 18) is interconnected (See passageways 30 and 36). Consequently, when the sensor is used and the space is evacuated, as described in col. 5, lines 49-50, each of the diaphragms is in contact with the vacuum. Consequently, Shkedi does not teach, but rather teaches away from, the claimed subject matter. A reference must be considered for all it teaches, including disclosures that teach away from the invention as well as disclosures that point toward the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985).

Provenzano is cited merely for the teachings of a curved membrane, which is irrelevant to the recitations of claims 1 and 46. Provenzano also does not teach or suggest a second membrane that is not in contact with a vacuum as claimed.

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Consequently, the cited prior art fails to teach or suggest all the features of claims 1 and 46. In fact, the final Office Action did not even discuss the salient features of claims 1 and 46 other than to state, without support, that the features of the claims, though not taught by any prior art of record, are, nonetheless, "obvious"

Consequently, the final Office Action has failed to make out a *prima facie* case of unpatentability with respect to these claims. "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Because the combination of Shkedi and Provenzano fails to teach or suggest the claimed second membrane that is not in contact with a vacuum, the rejection of claims 1-7 and 46-49 should be reconsidered and withdrawn.

Claim 53 recites:

A pressure sensor comprising:
a first membrane that flexes in response to pressure;
a reference cavity covered by said first membrane, said reference cavity containing a vacuum; and
a second membrane adjacent to said first membrane, said first and second membranes forming a capacitor having a capacitance that varies in accordance with the flexing of said first membrane and said pressure;
wherein one of said membranes is formed with a curvature with respect to the other said membrane.
(emphasis added).

In contrast, the combination of Shkedi and Provenzano fails to teach or suggest a membrane formed with a curvature with respect to another membrane. As noted above, the final Office Action cites Provenzano as teaching a membrane formed with a curvature. (Action of 3/8/05, p. 3). However, as Applicant demonstrated previously, this is a misreading of Provenzano which should *not* have been reiterated in the final Office Action.

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Fig. 3 of Provenzano *appears* to show a curved membrane (104). However, the membrane (104) is *not* formed with a curvature as claimed, but is merely shown in Fig. 3 as being deflected under the application of pressure. (Provenzano, col. 3, lines 51-53). Fig. 2 shows the same membrane (104) having no curvature when pressure is not being applied. Consequently, the combination of Shkedi and Provenzano fails to teach or suggest a membrane *formed with a curvature* with respect to another membrane, as claimed.

The final Office Action appears to concede that Shkedi and Provenzano fail to teach the claimed membrane having a curvature with respect to another membrane. In response to Applicant's explanation of what Provenzano actually teaches, the final Office Action now merely argues that "all diaphragms and membranes are formed with some inherent curvature (even if the curvature possesses a very large radius of curvature)." (Action of 3/8/05, p. 4).

This statement is unsupported by the art of record, but, even if credited as true, does not apply to the recitations of claim 53. If all membranes have an inherent curvature, as alleged by the final Office Action, then both the first and second claimed membranes would have this "inherent" curvature and, therefore, would *not* have a curvature *with respect to each other*. Thus, the cited prior art does not teach or suggest the claimed first and second membranes of a pressure sensor where "one of said membranes is formed with a curvature *with respect to the other said membrane*."

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). For at least this reason, the rejection of claims 53 and 54 should be reconsidered and withdrawn.

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For the foregoing reasons, the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of the application in light of these remarks is courteously solicited. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,



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